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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/197,096	11/20/1998	MARK ALISTAIR POLETTI	0805774-0001	9905

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CHOATE, HALL & STEWART LLP
TWO INTERNATIONAL PLACE
BOSTON, MA 02110

EXAMINER

LAO, LUN S

ART UNIT	PAPER NUMBER
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2615

DATE MAILED: 06/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/197,096

Applicant(s)

POLETTI, MARK ALISTAIR

Examiner

Lun-See Lao

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Introduction

1. This action responds to amendment filed on 04-03-2006. Claims 1-20 are cancelled and claims 21-41 are pending.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
3. Claims 40-41 are recites the limitation "an input, a plurality of outputs " recited in claims 40-41. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 21 is rejected under 35 U.S.C. 102(b) as being anticipated by Sato (US PAT. 4,538,495).

Consider claim 21, Sato teaches that a musical instrument (guitar) preamplifier, comprising:

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electronic filters (see fig.4, 11 (CPU)) having at least two stages for splitting an input signal into two or more separate frequency bands each having a different center frequency (such as, different tone-color group), said filters (14a,14b (LSI)) comprising a substantially equi-phase response wherein a phase response of each stage is substantially identical for each frequency band (col. 5 line 39-col. 6 line 36);

two or more non-linear circuits (14a,14b), each of which distorts one of the frequency bands (col. 5 line 39-col. 6 line 36); and

a summing network (18) for recombining said frequency bands(see col. 4 line 39-56).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) .

Consider claim 33, Sato teaches that a digital musical instrument (guitar) preamplifier, comprising:

Digital electronic filters (see fig.4, 11 (CPU)) having at least two stages for splitting an input signal into two or more separate frequency bands each having a different center frequency (such as, different tone-color group), said filters (14a,14b (LSI))

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comprising a substantially equi-phase response wherein a phase response of each stage is substantially identical for each frequency band (col. 5 line 39-col. 6 line 36);

two or more non-linear circuits (14a,14b), each of which distorts one of the frequency bands (col. 5 line 39-col. 6 line 36); and

a summing network (18) for recombining said frequency bands(see col. 4 line 39-56), but Sato fails to teach a digital summing network.

However, it is well know in the art (the official notice is taken) that using digital summing network in the circuit for enhance output audio signal is well known in the art.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that the digital musical instrument as taught by Sato could have used the digital summing network for enhance output audio signal.

8. Claims 22-23, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) in view of Orban (US PAT .4,412,100).

Consider claims 22 and 34 Sato differs from claims 22,34 in not disclosing that a preamplifier of filters comprises a cascade of $2^N - 1$ pairs of even-poled low and high pass filters arranged such that each pair splits the incoming frequency band in two, where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by $(2^{n-1} - 1)$ all pass filters with phase response corresponding to the $(2^{n-1} - 1)$ other low and high pass filter phase response in that stage such that the phase response of each stage is similar for each frequency band.

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However, Orban teaches that a preamplifier of filters comprises a cascade of $2^N - 1$ pairs of even-poled low and high pass filters (see fig.3, (12,14 and 50,51)) arranged such that each pair splits the incoming frequency band in two (16,11 and 45,47, and 52,58 and 53,54), where N is the number of stages of pairs in the cascade, and wherein for the nth stage subsequent to the first, each low or high pass filter pair is preceded by $(2^{n-1} - 1)$ all pass filters (12,47 and 50,54) with phase response corresponding to the $(2^{n-1} - 1)$ other low and high pass filter phase response in that stage such that the phase response of each stage is similar for each frequency band (see col.3 line 19-col.4 line 23).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Orban into the teaching of Sato to provide an economical signal processor which series/parallel crossover configuration with summation of properties is used.

Consider claim 23, Orban teaches that a musical instrument preamplifier system of cascade has two stages of two pole low (see fig.3, (14,16,11,53,56) and high (51, 52,58,45,35) pass filter pairs.

9. Claims 24, 30-32,35-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) in view of Maag et al (US PAT. 5,892,833).

Consider claim 24, Sato does not teach clearly a musical instrument preamplifier system of each low and high pass filter pair is a state variable filter.

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However, Maag teaches that a musical instrument preamplifier system of each low and high pass filter pair is a state variable filter (see col.3 lines 1-30).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to utilize the teaching of Maag into Sato to provide a new and improved digital equalizer system and method for processing and performing equalization to an audio signal.

Consider claims 30-32, Maag teaches that a musical instrument preamplifier system of the non-linear circuit (see fig.6a, (211a –212n and 215a,b, 216a-n) for each frequency band has a different gain than those in the other frequency bands; and non-linear circuits (see fig.6a, (211a –212n and 215a,b, 216a-n) for higher frequency bands have a higher minimum gain than the non-linear circuits for lower frequency bands; and the distortion by said non-linear circuits is variable (see fig.6a, (211a –212n and 215a,b,216a-n and see discussion above claim 24).

Consider claims 35-36, Maag teaches that a digital musical instrument preamplifier each digital low pass and high pass filter (see fig.6a (211a-b and 212a –n)) is obtained by a bilinear transformation of a corresponding low pass and high pass analogue filter (see fig.1), and the all pass filters are obtained by a bilinear transformation of a corresponding all pass analogue filter; and digital filtering means comprises linear phase finite impulse response filters (see col.7 lines 50-67 and see the discussion above 24).

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10. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) as modified by Orban (US PAT. 4,412,100) as applied to claim 24, and further in view of Maag (US PAT. 5,892,833).

Consider claim 25, Sato does not teach clearly a musical instrument preamplifier system of each low and high pass filter pair is a state variable filter .

However, Maag teaches that a musical instrument preamplifier system of each low and high pass filter pair is a state variable filter (see col.3 lines 1-30).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to utilize the teaching of Maag into Orban and Sato to provide a new and improved digital equalizer system and method for processing and performing equalization to an audio signal.

11. Claims 26-27,37, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) in view of Koichiro (JP404142598A)

Consider claims 26-27,37, Sato differs from claims 26-27,37 in not disclosing that musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages of said filtering means.

However, Koichiro teaches that musical instrument preamplifier system of the filtering means further comprises variable cross-mixing after one or more stages of said filtering means (see fig.2).

Therefore, it would have obvious to one of ordinary skill in the to utilize the teaching of Koichiro into Sato, so that the system can provide a localization of the sound images of the musical sound signal.

12. Claims 28 and 38, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) as modified by Koichiro (JP404142598A) as applied to claims 21,26 and 33,37 above, and further in view of Maag (US PAT. 5,892,833).

Consider claims 28, 38, Sato and Koichiro do not teach that a digital musical instrument preamplifier of digital low pass filtering means after said digital non-linear circuits reduce high frequency distortion products.

However, Maag teaches that a digital musical instrument preamplifier of digital low pass filtering means (see fig.6a (211a-b and 212a -n)) after said digital non-linear circuits (see fig.6a (211a-b and 212a -n and 215a-b, 216a-n)) reduce high frequency distortion products.

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was make to utilize the teaching of Maag into the teaching of Koichiro and Sato to provide a new and improved digital equalizer system and method for processing and performing equalization to an audio signal.

13. Claims 29 and 39, are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato (US PAT. 4,538,495) as modified by Koichiro (JP404142598A) as applied to

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claims 21,26, 28 and 33,37-38 above, and further in view of Maag (US PAT. 5,892,833) and Orban (US PAT. 4,412,100).

Consider claims 29 and 39, Sato, koichiro and Maag fail to teach that a preamplifier system of the filters are combined with said summing network such that in successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band, and comprising subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing network is identical.

However, Orban teaches that a preamplifier system of the filters (see fig.3, (14,16,11,17,25)) are combined with said summing network (19,25) such that in successive stages the lowest frequency band is low pass filtered with a low pass filter and the other frequency bands are all pass filtered (12,47,50,54) with an all pass filter corresponding to said low pass filter, said lowest frequency band is then combined with the next lowest frequency band, and comprising subsequent stages of repeated filtering and combining until all frequency bands are combined, such that the phase response over all frequency bands through the low pass filtering and summing (19,25,31) network is identical (see col. 7 line 16-col. 8 line 54).

Therefore, it would have obvious to one of ordinary skill in the art at the time the invention was made to combine the teaching of Orban into the teaching of Sato,

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Koichiro and Maag to provide an economical signal processor which series/parallel crossover configuration with summation of properties is used.

Response to Arguments

14. Applicant's arguments with respect to claims 21-41 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Suenaga (US PAT 4,357,852) is recited to show other related the guitar preamplifier system with controllable distortion.

16. Any response to this action should be mailed to:

Mail Stop ____ (explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(571) 273-8300

Hand-delivered responses should be brought to:
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501. The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 06-02-2006



VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600